
Annex 83A – Task Force Discussion New Orleans, LA - Jan 2009

**Cu Sub-Task Force Chair
Chris Di Minico**

**Editor(s) – Ryan Latchman
Arthur Marris**

Cu Sub-Task Force

- **Cu Sub-Task Force Chair and Editor for 40GBASE-CR4 and 100GBASE-CR10, clause 85**
 - **Chris DiMinico**
- **Editor, 40 Gb/s (XLAUI) and 100 Gb/s (CAUI) interfaces, Annex 83A**
 - **Ryan Latchman**
- **Editor, Clauses 69, 73, 74, 84, Annexes 69A, 69B**
 - **Arthur Marris**

Task Force Schedule

Tuesday, January 13, 2009

Time	Presenter	Affiliation	Title	File Name
8:30 AM	John D'Ambrosia	Force10 Networks	Agenda and General Information	agenda_01_0109.pdf
9:15 AM	Ilango Ganga	Intel	Chief Editor's Opening Report	ganga_01_0109.pdf
9:50 AM			ITU-T SG15, Document #COM 15-LS 23-E	LS23.pdf
9:55 AM			Break	
10:10 AM	Ryan Latchman	Gennum	802.3ba nAUI Ad Hoc Status	latchman_01_0109.pdf
10:25 AM	Mark Gustlin	Cisco	Logic SubTask Force - Opening Report	gustlin_01_0109.pdf
10:45 AM	Chris DiMinico	MC Communications	Cu SubTask Force - Opening Report	diminico_01_0109.pdf
11:05 AM	Pete Anslow	Nortel	Optical SubTask Force - Opening Report	anslow_01_0109.pdf
12:00 PM			Lunch	
1:15 PM	Pete Anslow	Nortel	Task Force Discussion / Comment Resolution: Skew. Presentations to be considered: isono_01_0109.pdf	anslow_06_0109.pdf
2:45 PM			Break	
3:05 PM	Mark Gustlin	Cisco	Task Force Discussion / Comment Resolution: Loopback. Presentations to be considered: trowbridge_02_0109, dawe_02_0109.	gustlin_04_0109.pdf
4:35 PM			Break	
4:45 PM	Pete Anslow	Nortel	Task Force Discussion / Comment Resolution: Test Patterns: Presentations to be considered: dawe_01_0109	anslow_07_0109.pdf
6:15 PM			Dinner	
7:45 PM	Chris DiMinico	MC Communications	Task Force Discussion / Comment Resolution: XLAUI / CAUI, Chip to Module. Presentations to be considered: ghiasi_01_0109, latchman_02_0109, dawe_03_0109	diminico_05_0109.pdf
9:15 PM			Break for Day	

83A - comment resolution priority

- **Produce a technically complete draft**
- **Produce a draft with no open technical issues**
- **What is complete?**
 - **All objectives are met**
 - **All of 5C are met**
 - **PAR Title, Scope, Purpose, Need are met**
- **All essential requirements are definitively stated**

83A – Layer diagram

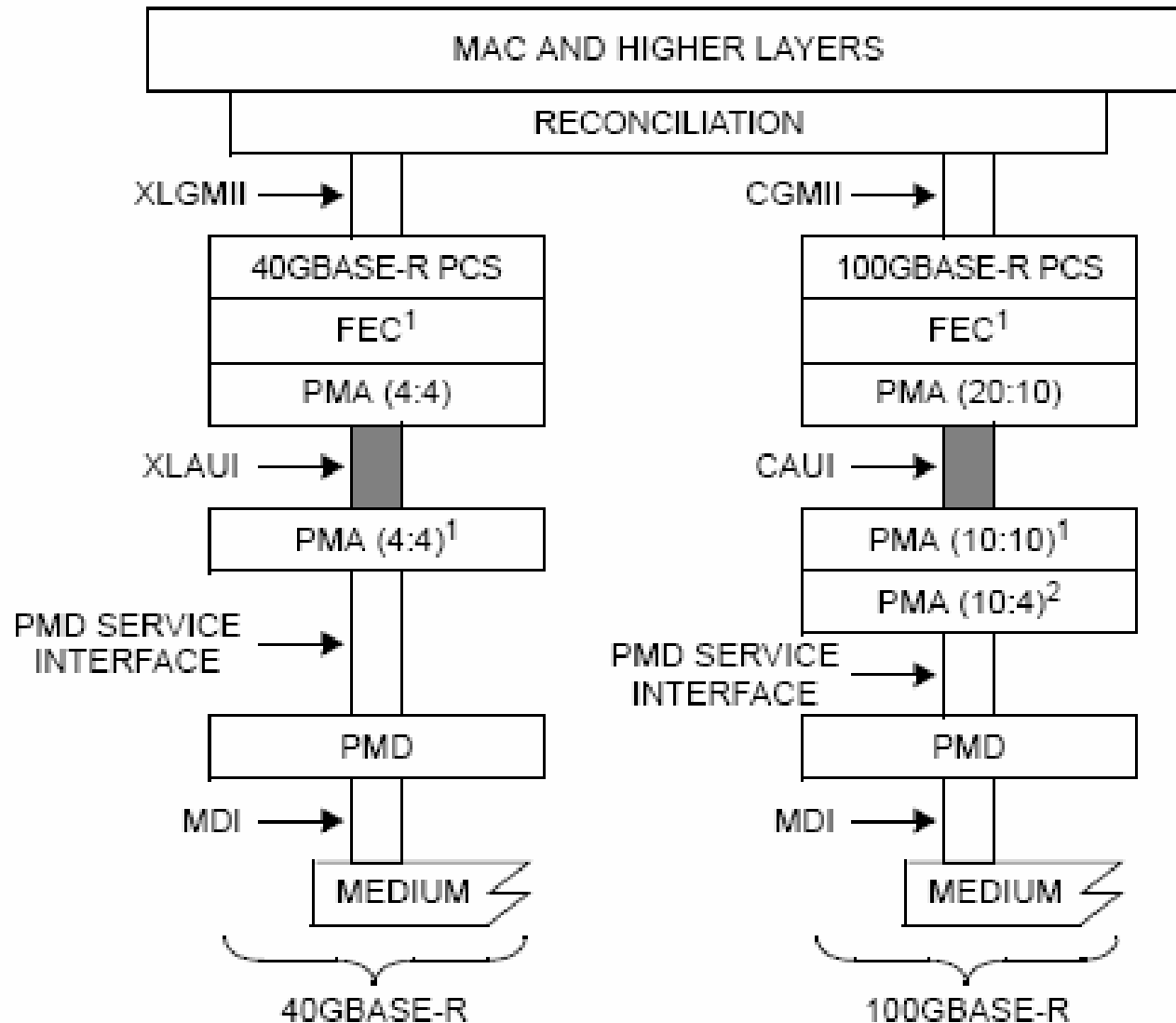


Figure 83A–1—Example relationship of XLAUI and CAUI to IEEE 802.3 CSMA/CD LAN model

83A – Application and test points

- The application of the optional XLAUI/CAUI is primarily intended as a chip-to-chip (integrated circuit to integrated circuit) interface implemented with traces and potentially one connector on a printed circuit
- Transmit and receive test points

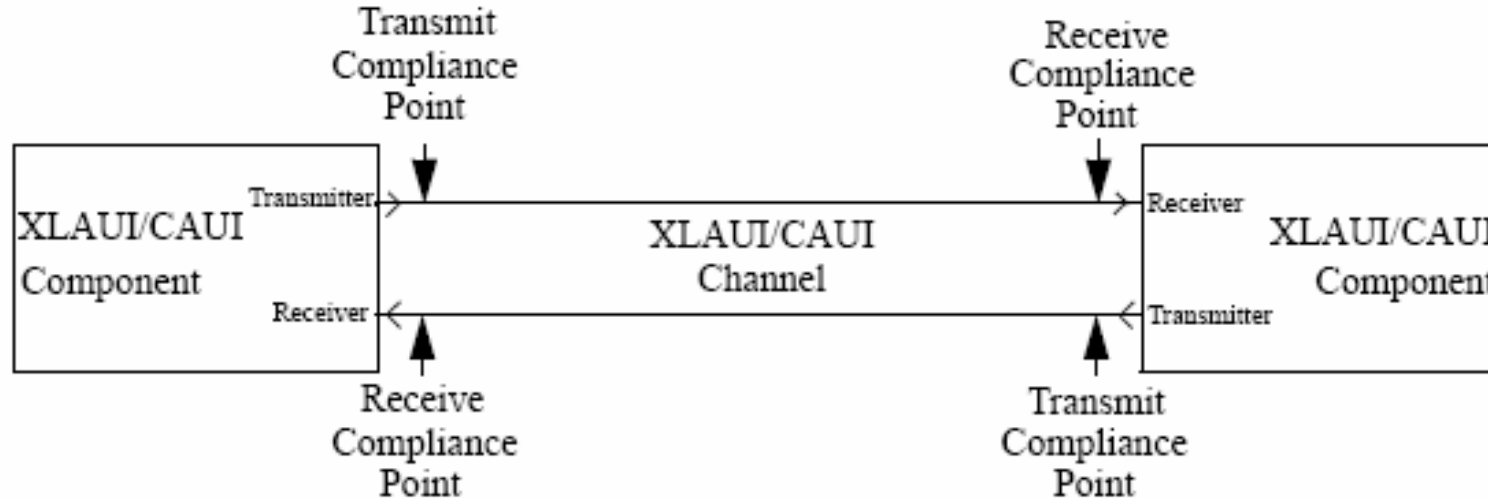


Figure 83A-2—Definition of transmit and receive test points

Tuesday 7:45 PM - meeting agenda

- **Clause 83A, 40 Gb/s (XLAUI) and 100 Gb/s (CAUI)**
 - **Resolve comments**
 - **Hear presentation material in support comment resolutions**
- **nAUI proposal comparison and key issues**

† **Refinement to XLAUI/CAUI Electrical Specifications**
Ali Ghiasi Broadcom
Comments; 48, 49, 61, 52, 55, 50, 54, 53, 56, 57, 58

† **nAUI TBD Closure-Ryan Latchman, Gennum**
Comments; 48, 49, 50, 53, 54, 56, 60, 249, 250, 251, 255,
256, 259, 260, 261, 262, 265, 268

† **Compliance points for Nauti-Piers Dawe Avago**
Comments; 131, 206, 325, 326, 437, 448, 462, 470, 544, 566,
569, 574, 590, 594, 596, 603, 608, 619, 627, 634,
635, 655, 656, 657, 658, 660

Compare proposals to close TBDs and key issues

- Jitter methodology & values
- Channel
- De-emphasis
- BER
- Interference

Comments to:

- Chip-Module

Chip to module discussion

Chip to chip

D1.1 – Chip to Chip (optionally 1 connector)

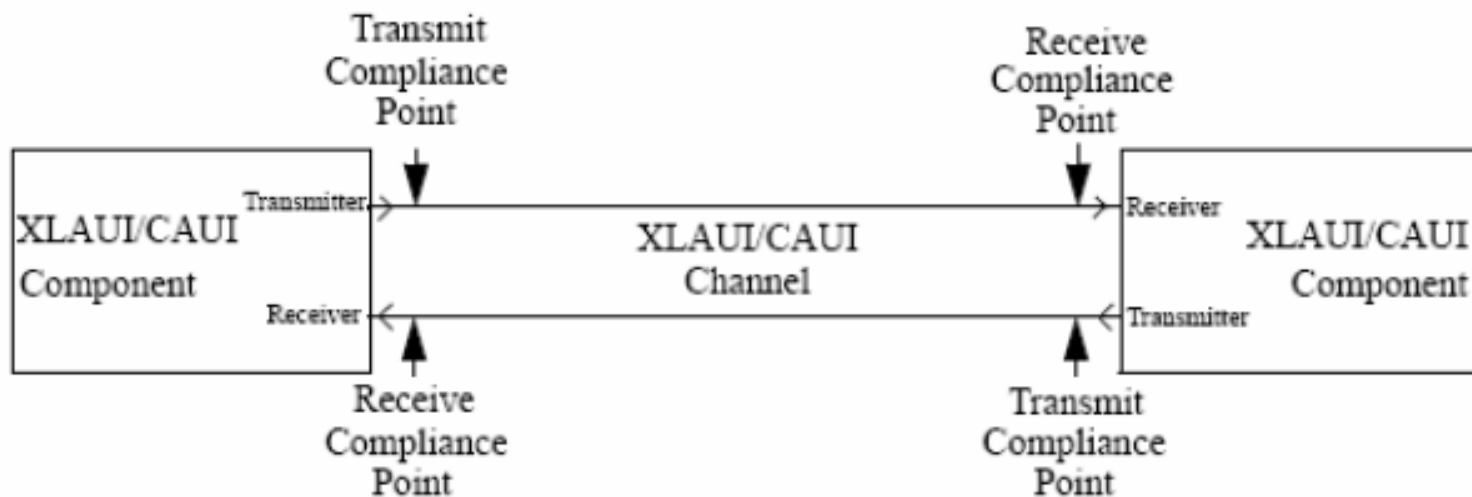
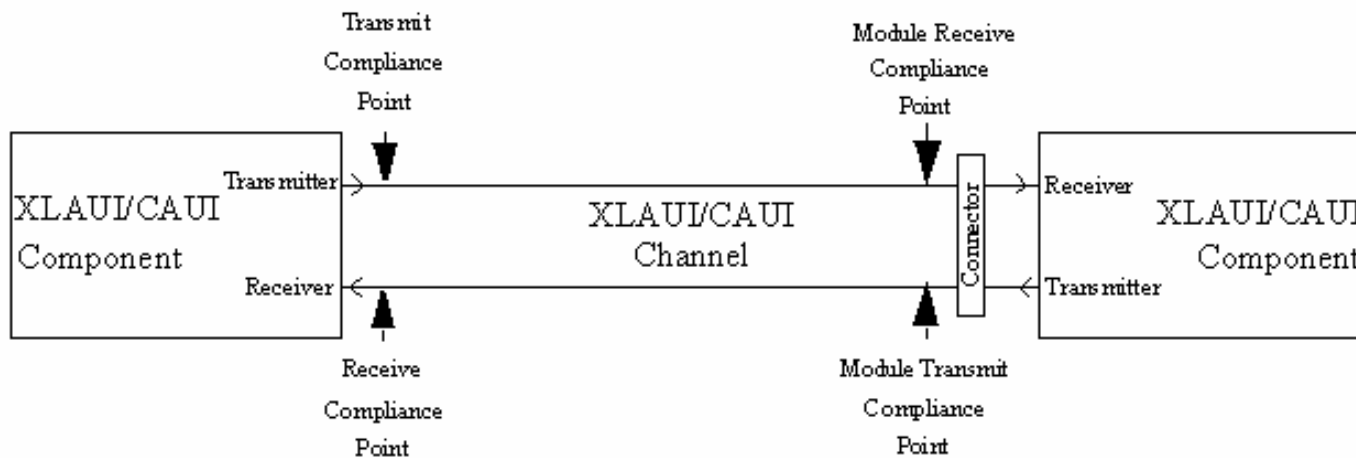


Figure 83A-2—Definition of transmit and receive test points

Chip to module

Proposal: Add figure with explicit connector and **module compliance** points and associated loss budget

Comments:295,662,661,617



Section	Loss Budget
Host XLAUI / CAUI Component to Module Compliance Point	7.9dB
Connector Loss	0.5dB
Connector to Module XLAUI / CAUI Component	2.1dB

Summary: Loss budget identical, compliance point definition is the difference

Add new annex or subclause to 83A

- **XX.X Chip to module**
 - Text for compliance points and partitioning of channel budget
 - Add crosstalk limits
- **XX.X Module transmitter characteristics**
 - Updated table & return loss
- **XX.X Module receiver characteristics**
 - Updated table & return loss
- **NOTE: needs completion this week to produce a technically complete draft with no open technical issues**

Jitter values and methodology

D1.1

Transmitter

Receiver

Maximum Total Jitter ^b	0.32	UI	Maximum non-EQ Jitter (TJ - ISI) ^c	0.42	UI
Maximum Deterministic Jitter ^c	0.17	UI	Receiver eye mask definition X1 ^d	0.31	UI

latchman_02_0109

Maximum Deterministic Jitter

Maximum Total Jitter ^b	0.32	UI	Maximum non-EQ Jitter (TJ - ISI)^c	0.42	UI
Maximum Deterministic Jitter ^c	0.17	UI	Receiver eye mask definition X1 ^d	0.31	UI

ghiasi_01_0109

Maximum Deterministic Jitter

J12

J2

0.47

Maximum Total Jitter^b	0.32	UI	Maximum non-EQ Jitter (TJ - ISI)^c	0.42	UI
Maximum Deterministic Jitter^c	0.17	UI	Receiver eye mask definition X1^d	0.31	UI

J2

0.23

J12

Comments: 259,56,255,52,57,55,552,514,518,481

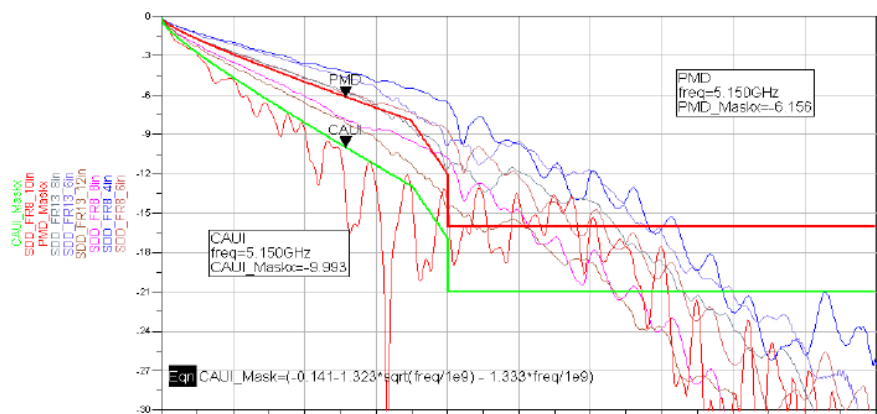
Summary: Values disagree due to test methodology differences

Channel

D1.1 - TBD

ghiasi_01_0109 - Informative

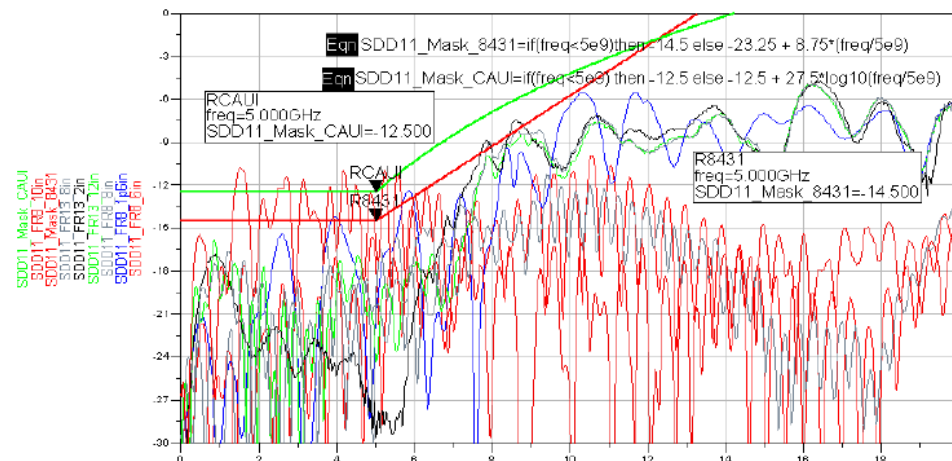
SDD21



Data shown up to 20 GHz but the mask should stop at 11.1 GHz

Comments:260,59,262,60

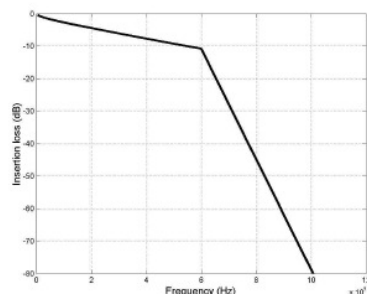
SDD11



Data shown up to 20 GHz but the mask should stop at 11.1 GHz freq, GHz

latchman 02 0109 - Informative

Parameter	40/100G XLAUI/CAUI	Units
b_1	-6.52e-006	
b_2	-9.55e-011	
b_3	-8.17e-021	
b_4	6.06e-031	
f_1	0.05	GHz
f_2	6	GHz
f_{max}	11.1	GHz



$$S21(f) \leq S21_{\max}(f) = 20 \log_{10}(e) \times (b_1 \sqrt{f} + b_2 f + b_3 f^2 + b_4 f^3)$$

$$\text{for } f_1 \leq f \leq f_2$$

$$S21(f) \leq S21_{\max}(f) = S21(f_2) - 1.7 \times 10^{-5} (f - f_2)$$

$$\text{for } f_2 \leq f \leq f_{\max}$$

Summary:
SDD21 in agreement, increase to 10.5 dB at 5.5GHz

SDD11 in agreement

De-emphasis

D1.1 - TBD

Comments:50,54,53,249,250,261

latchman_02_0109 – minimum value of de-emphasis

ghiasi_01_0109 – minimum value of de-emphasis, relate inner eye to rise / fall time and amount of de-emphasis

Summary:
Methodology agreement
Update Tx Eye Mask, verify equation

Minimum De-emphasis	4.8	dB
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Minimum Vtx-de-emphasis	See equation	mV
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Table 83A-1—Transmitter characteristics

Parameter	Value	Units
Signalling speed per lane (range)	10.3125 ± 100 ppm	GBd
Single-ended output voltage range		
maximum	4.0	V
minimum	-0.4	V
Maximum Differential Output Voltage, peak-to-peak	760	mV
Maximum Termination Mismatch at 1MHz	5	%
Maximum Output AC Common Mode Voltage, RMS	15	mV
Minimum Output Rise and Fall time (20% to 80%) ^a	24	ps
Differential Output S-parameters	see 83A.3.3.3	dB
Common Mode Output S-parameters	see 83A.3.3.4	dB
Maximum Total Jitter ^b	0.32	UI
Maximum Deterministic Jitter ^c	0.17	UI
Transmitter eye mask definition X1^d	0.16	UI
Transmitter eye mask definition X2^d	0.38	UI
Transmitter eye mask definition Y1^d	190	mV
Transmitter eye mask definition Y2^d	380	mV